1 AUGUST 1957

data

VERNMENT RESEARCH AND DEVELOPMENT DIGEST VOL. 2, NO. 8

this issue . . .

SUN-POWERED SAILING SHIP

KENTANIUM

2200°F
CONTINUOUS OPERATING TEMPERATURES

LIMITED EXPOSURE
5000°F

If any of your designs are grounded because yo temperatures are too high for your materials- Kentanium may be just what you need.

Kentanium is the name of a family of Titaniu Carbides, developed by Kennametal Inc. It molded from powders into many forms, retai strength and structural integrity at elevated te peratures, and has high resistance to thermal shoc

Engineers have reported successful use at co tinuous operating temperatures up to 2200°F, a under intermittent exposures up to 5000°F, whe oxidizing atmospheres were combined with abr sion, and the parts were under compressive tensile loading.

Many grades of this lightweight, exceptionall pure titanium carbide have been developed fo various requirements. Kentanium can be extrude and molded into many forms, eliminating difficu machining. More intricate forms are readily m chined from pressed slugs. Precise dimension tolerances are attained by grinding after form are sintered.

Kentanium is presently serving in bearing thrust runners and other parts in pumps fo handling high temperature liquid metals; blade wheels, nozzle vanes, and temperature sensi elements for gas turbines and jet engines; bushing seals and bearings (unlubricated); and other appli cations at high temperatures. Added informatio is offered in our bulletin "Kentanium." Send for i . . . and ask Kennametal engineers for added he if you need it to adapt Kentanium to your specif problem. Write KENNAMETAL INC., Latrobe, P

*Kentanium and Kennametal are the trademarks of a series of h carbide alloys of tungsten, tungsten-titanium and tantalum.

INDUSTRY AND
KENNAMETAL
...Partners in Progress

data

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briefings!

NAVY ASKS FOR MORE SMALL FIRM BUSINESS:

Assistant SecNav for Material Fred A. Bantz told Senate Small Business Subcommittee on Procurement, "More emphasis will be placed on subcontracting by large firms with small business, on research and development contracting with smaller firms." Bantz reminded the group that trends to more complex weapons and techniques necessitate large procurement spending to big firms, but said, " The Navy is sincerely trying to increase the part played by small business in Navy procurement."

REDEFINING OF "SMALL BUSINESS" DELAYED:

Possible redefining of "small business" will not be arrived at this session of Congress (definition now is 500 employees or less). H.R. 7963 amending Small Business Act of 1953, reported out of House, has been set over to next year by Senate. Preservation of free competitive enterprise is aim of measure, coupled with insuring to small business a fair proportion of purchases and contracts in government. This aim has prevailed since 1941 but practice is something else again, as small business has been receiving less than one-fifth of Dept. of Defense money on an average.

AIR FORCE AND BANKERS JOIN TO PROMOTE SMALL BUSINESS:

The American Bankers Association will help promote an Air Force drive to give small business a bigger share of the procurement dollar. Dudley C. Sharp, Assistant Secretary of the Air Force for Materiel, told Senate Small Business Committee that 15,000 member banks of the association will point out (1) how small businesses can become sources of government supply and (2) how small companies can acquaint themselves with the services of the 18 Air Procurement District Offices in the U. S.

ADMIRAL DIXON TAKES TOP BUAER POST:

R/Adm. Robert E. Dixon relieved R/Adm. James S. Russell as Chief of the Navy's Bureau of Aeronautics on 15 July. R/Adm. Russell, promoted to vice admiral, becomes Chief of Staff Atlantic Fleet.

MAJ. GRINE NEW CHIEF OF ARDC INFO:

Maj. Kenneth E. Grine, information services staff member at Air Research and Development Command headquarters for the past three years, replaces Maj. Burl Williams as Chief of OIS Public Information Division, which is responsible for liaison between all public and industrial news media and ARDC. Williams will attend Command and Staff course at Newport, R. I.

DEPUTY ASSISTANT R&E POST FILLED:

Dr. D. P. Barnard of Chicago, research coordinator for Standard Oil of Indiana, is named new Deputy Assistant Secretary of Defense for Research and Engineering in Dept. of Defense. No Assistant Secretary yet named. Barnard is past president of SAE and charter member of Institute of Aeronautical Sciences.

BUDOCKS MAY BE RENAMED BUREAU OF CIVIL ENGINEERING:

Navy asks Congress to make name of Bureau of Yards and Docks less confusing by authorizing title of Bureau of Civil Engineering. Expansion of work in this bureau makes present name "non-descriptive," says SecNav Gates.

U.S. ARMED FORCES WILL BE REDUCED AS FOLLOWS:

	Enlisted Personnel	Officers	Total Reduction
Army	44,470	5,530	50,000
Navy	13,365	1,635	15,000
Marine Corps	9,100	900	10,000
Air Force	21,200	3,800	25,000
	88,135	11,865	100,000

FREE RADICALS SYMPOSIUM SEPT. 18-20:

Inqueries or requests for program of the National Bureau of Standards Free Radicals Symposium should be sent to NBS, Washington 25.

MESSAGE TO READERS

The Air Force announced recently that it is cancelling further development of the North American NAVAHO intercontinental cruise missile for budget reasons and because the missile is based on an "earlier state of the art."

Martin Caidin, DATA airpower specialist and author of current best-seller, Air Force, presents in this issue his own personal feelings regarding cancellation of the NAVAHO project.

THE NAVAHO CANCELLATION -- Caidin

The recent cancellation by USAF of its tremendous North American SM-64 NAVAHO program is a far greater blow to current aerodynamic activity than is generally realized within the industry. NAVAHO was more than merely another air-breathing intercontinental-range cruise-type missile. This was one bird which stood out against all the others as a thing of beauty, an aerial machine which belied its tremendous speed of Mach 2.5 or better, its cruise altitude of above 75,000 feet and a range which was to have taken it in a steadily-increasing altitude run for more than 5000 miles.

NAVAHO embodied a host of revolutionary features. It was more than merely a missile, and the program's cancellation will be felt hard, eventually, in more ways than are readily apparent, such as the dismissal of 10,000 NAA workers (including subcontractors) a half billion dollars down the drain, the stoppage of vital ramjet work (on this project) by Curtiss-Wright.

The combination in NAVAHO of high supersonic cruise speed, intercontinental range for a ramjet vehicle, celestial and inertial guidance, evasive maneuverability, canard design and various empennage arrangements -- all these and more -- if brought to a successful conclusion, could have granted U.S. aviation a greatly increased spectrum.

The argument that the ICBMs have advanced so rapidly that NAVAHO's usefulness has been negated is a hard pill for North American Aviation to swallow. I do not believe that story and few engineers will be found who will cotton to this fairy tale. NAVAHO represents an engineering advance (without exotic fuels) over any other winged missiles as great as does the startling Convair B-58 over that grand old wartime lady the Boeing B-17. I have never failed to see any engineer fail to be impressed with the sheer beauty of the NAVAHO design. Every now and

then in aviation, such an airplane comes along. In the field, it is an accepted saying that if an airplane really looks good, it is going to be good. And NAVAHO looked wonderful.

It is a shame that none of the three NAVAHO trials fired at the Cape Canaveral sands proved successful. Perhaps the weight of a few highly successful flights would have enabled USAF to look elsewhere in its program-slashing - because of shortage of funds - than at the SM-64 project. However, a combination of instrument and equipment failures, rocket-booster blowup and, in a successful boost, failure of the big ramjets to fire, leaves the NAVAHO project with a big goose egg in respect to a successful flight. Bitter NAVAHO engineers point with justification to the Boeing IM-99 BOMARC which for a long time scored a run of failures, both on the ground and in the air, before it was successful.

Standing back several hundred feet and looking up at the gigantic NAVAHO launcher was like being allowed a peek into the future. That launcher and its auxiliary facilities was strictly out of science fiction. It was like seeing H. G. Wells coming true. It was this and more. It represented brilliant thinking, the forgetting of current ideas. It seemed to me a real try at spanning the years in a single, mighty effort.

It is too bad they are going to scrap all of it.

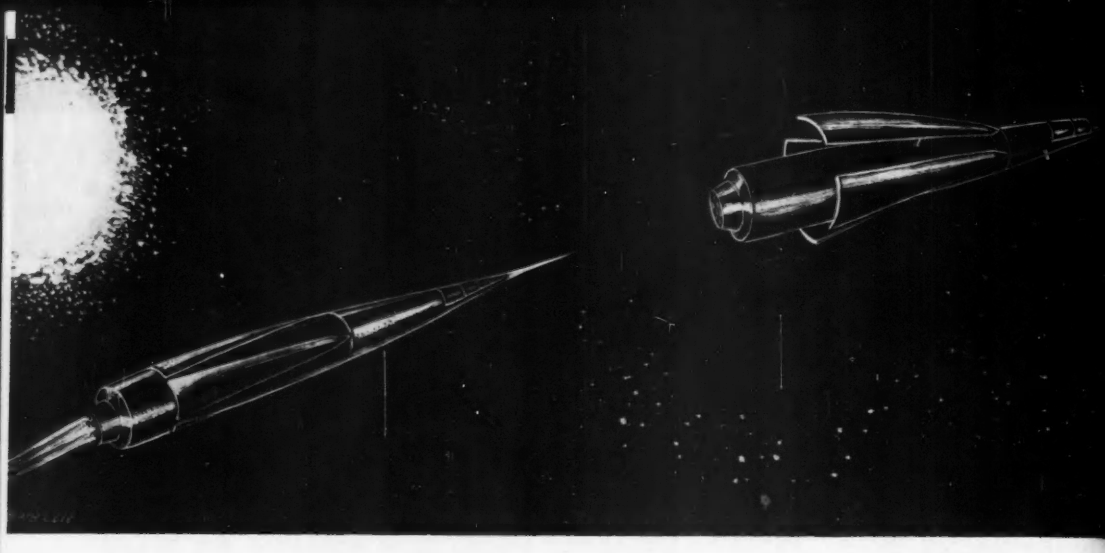
USAF BALLISTIC MISSILE RECORD

Here is a rundown of USAF IRBM and ICBM firings and their results as reported by AVIATION WEEK on 15 July.

THOR. Three fired thus far. First missile encountered valve malfunction a few inches off ground, resulting in destruction. Second missile went 10 feet off the vertical after takeoff and was destroyed by range safety officer. Third missile was destroyed on the pad during refueling - fuel regulator malfunction.

ATLAS. Only firing to date resulted in missile destruction after engine gimbaling system malfunctioned. During the launch the engine operated for 32 sec. - 10 on the ground, 22 sec. in the air.

Most successful firing to date has been Army's JUPITER IRBM which has reached altitude of 300 mi., traveled more than 1500 mi.



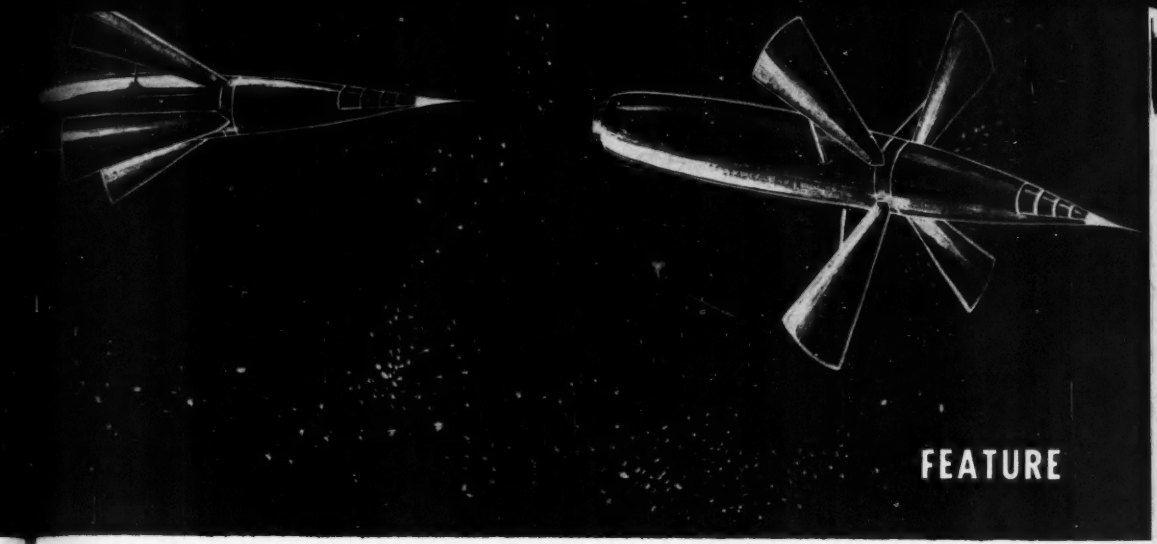
Since earliest days man has looked upon the sun as the primary source of power. Through its action we receive our light, heat, winds, food (through photosynthesis) and many other necessities and pleasures in life.

Man has long sought solar energy as a source of power and is, in fact, now using solar energy in limited ways to heat homes, cook food, distill water and provide high temperature furnaces. However, the use of the sun as a source of motive power has, until now, eluded him.

The quest for the best method of propelling a space vehicle may change this and see the sun - or other forms of light energy - used as direct motive power.

Photonic Drive (propulsion by light) is looked upon by rocket specialists and Air Force scientists as the ultimate method of space vehicle propulsion. Currently electronic accelerators are being developed for Ionic Drive, an intermediate step. The Ionic Drive principle (reported in the May issue of DATA) is that of accelerating charged particles at ever increasing speeds by a series of alternate current plates so that the resulting stream kicks the space vehicle ahead.

It had earlier been proposed that the Ionic Stream could be converted to light and thus true Photonic Drive could be accomplished. Now, some scientists including Dr. Ernst Stuhlinger, chief of the Research Projects Office of the Army's Redstone Arsenal, have advocated the possibility of letting light from the sun or stars push the space vehicle by a system of sails. It should be noted that in outer space where there will be no friction from atmosphere, the slightest push will move



the space vehicle at ever increasing speeds. Therefore, light from an exterior source could provide the power and could send the space vehicle at the speed of the propellant force - or perhaps even faster in the same manner as an ice boat can outrun the wind that pushes it. At the speed of light our Sun-Powered Sailing Ship would move 186,000 miles per second or about 11,000,000 miles a minute.

It has been noted that mass increases at these high speeds and some scientists have gone so far as to state this might be nature's way of protecting space voyagers, since with sufficient spread between the molecules at these high speeds, the space ship and its occupants would have little to fear in the event of a collision. The objects would pass through each other.

Although the principle of the sun-powered sailing ship might sound like a dream, scientists at the Air Force Office of Scientific Research, where DATA originally received the basis for this story, assure us that it is not. It is true it is in the realm of speculation, but then speculation always precedes groundwork. And luckily, speculation cannot be classified.

We have all seen the little light powered windmills in windows where the vanes are turned by the photons of light impinging on them in a vacuum. The same principle would apply in the vacuum of space.

The sun-powered sailing ship would lift itself from the earth by conventional sources of power. Once free of the restricting atmosphere of the planet, however, the powerplants could be secured and the "sails" unfolded.

338. AF TALKS OF BALLOON-LAUNCHED ROCKET HITTING MOON:

Breakthrough formula and preliminary test indicate that sooner than expected, Air Force may - repeat may - reach moon. USAF project in October will be a balloon sky platform designed to lift a three-stage instrumented rocket and its launching apparatus about 104,000 feet over Minnesota. Termed PROJECT FAR SIDE, ARDC spokesmen say no deliberate attempt will be made to hit moon, but such an event with height of launching platform and capabilities of the three-stage vehicle being launched are not to be discounted. Scientists say they would not be surprised. ///ARDC 200 0712/

339. AVIATION TO VIE WITH ELECTRONICS INDUSTRY:

Possible further encroachment by aircraft industries into the electronics industry is seen as outcome of shift in Air Force money. Lockheed and other aircraft firms have stated recently that they will jump into electronics "...with both feet." Secretary Douglas of USAF gathered aviation industry leaders into his office recently to point out AF is spending too much on airplanes; will shift to electronics dominated weapons and more responsibility for electronic system contractors. Surplus of idle space in aircraft plants reportedly 22.5 million square feet, a critical condition. Electronics leaders have their plants at bursting point, but dread prospective entry of aircraft firms into their field. ///Composite: Electronic Week, interviews/

340. A-C SPARK PLUG GETS THOR GUIDANCE CONTRACT:

The A-C Spark Plug Division of General Motors will research and produce an inertial guidance system for THOR missiles under terms of a $38 million contract with USAF. ///Pentagon OPI 0713/

341. HIGH SPEED SURVEILLANCE DRONES TO BE BUILT:

A $12 million contract for high speed surveillance drones has been awarded Fairchild Aircraft by the Army Signal Corps. Fairchild has stated that the new reconnaissance drones are to be "sophisticated" missiles and would be a diversification of scope to present Fairchild projects. ///W. L. Landers, v. p., Fairchild A/C 0712/

342. NAVY AIRCRAFT DELIVERIES TO REMAIN STABLE:

Although more Navy money will go to electronics and less to airframe manufacturers in coming fiscal years, no general cutback is seen for naval aircraft deliveries. Already contracted for 1958 delivery are about 2200 aircraft and for 1959 delivery nearly 1600. Future plans re: carriers and guided missile ships will be affected by congressional action on budget, according to CNO spokesmen. ///CNO/

343. DE HAVILLAND GYRON BELIEVED MOST POWERFUL JET:

De Havilland Gyron jet engine, now a private experiment, is believed to be more powerful than any other in world. Meant to be powerplant for supersonic aircraft capable of Mach 3, it has "approved static thrust" of 20,000 pounds without reheat, increased to 25,000 pounds with afterburner. ///Jet Propulsion Magazine/

344. NEW CONCEPT ON FRICTION DRAG MAY RAISE SPEED:

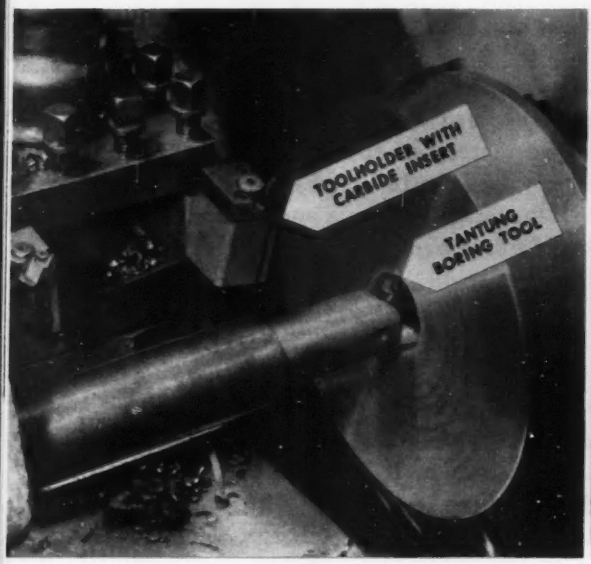
Northrup, working for ARDC, is evolving new design to increase range, load capacity and reduce drag. Allied to boundary layer control, air is sucked through small slots in wing surface. Plane experimenters have found friction drag to be reduced as much as 1/7th of normal in combat aircraft. Next step will be examination of cost and weight penalty in the wing of a B-57.

Northrup also has received a USAF contract for production of a new supersonic target drone, the XQ-4. Said to exceed 60,000 feet and be recoverable by parachute, the XQ-4 is launched from a B-50 bomber. Contract totals $3,692,000. ///ARDC 0628 and Northrup/

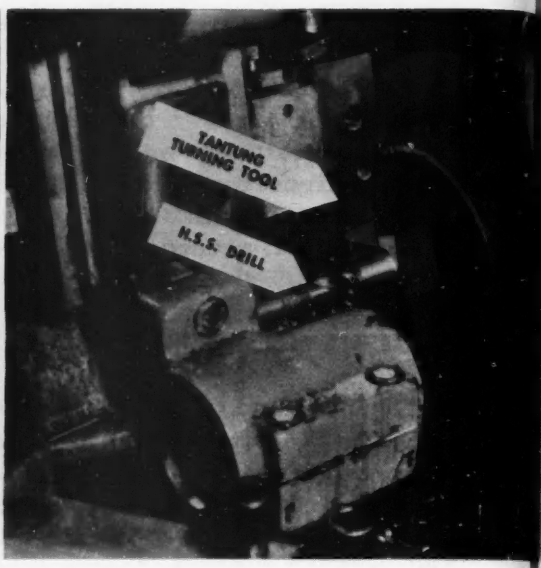
345. NEED FOR TAILPIPE HEAT-RESISTANT MATERIAL:

Supersonic ramjet tailpipes, in which combustion takes place, may exceed structural temperature limits of metals. Barrier may be pushed back by use of internal ceramic coatings. Ultimately the thermal limits of ramjet flight can be extended only by more complex means of tailpipe cooling. Studies are currently underway at Marquardt Aircraft to determine limits of thin-walled metal tailpipes in free airstream.
///Jet Propulsion Magazine/

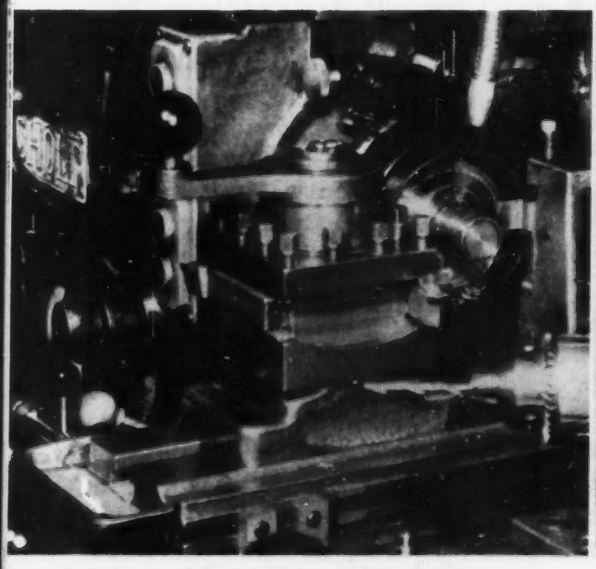
FROM V-R...TAN



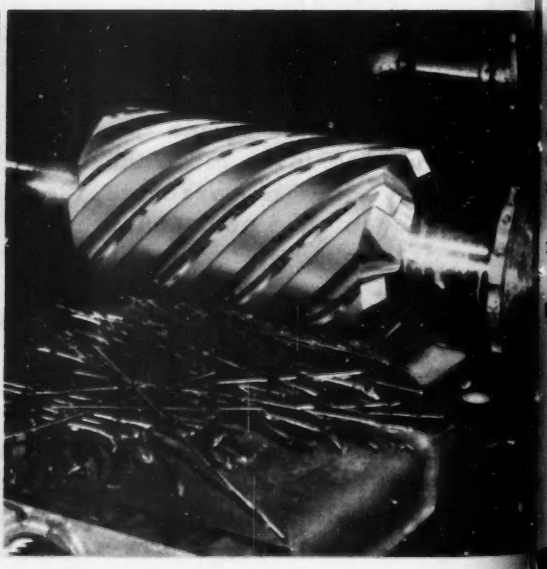
MULTIPLE TOOLING with TANTUNG and CARBIDE. Turning an 8″ O.D. at 450 sfpm creates a boring speed of only 150 sfpm on the 2⅛″ I.D. Such low speeds cause carbides to wear excessively. Tantung gives maximum tool life.



MULTIPLE TOOLING with TANTUNG and HSS. Drilling a ¾″ I.D. with HSS at 60 sfpm, while turning the 3″ square bar to a 2″ O.D. Surface speed on the O.D. is 160 sfpm, too high for HSS, but easily handled by Tantung.



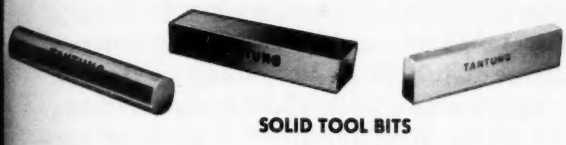
FOR OLDER MACHINES. When machines lack sufficient speeds for carbides, production and tool life suffer. Use of Tantung tools in such cases increases production and reduces costs.



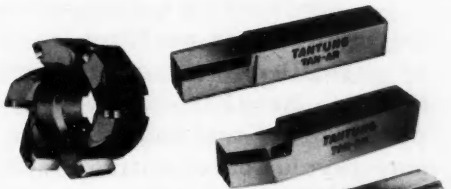
TANTUNG CAST-TO-FORM—Tantung is available cast-to-form for helical milling cutter blades, form tools and wear parts. Cast-to-form Tantung is cheaper in the long run than grinding from a solid.

UNG Cast Alloy-

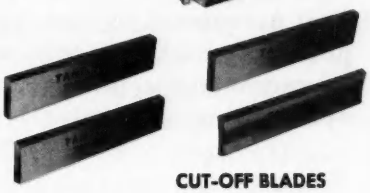
For Cutting Tools and Wear Parts



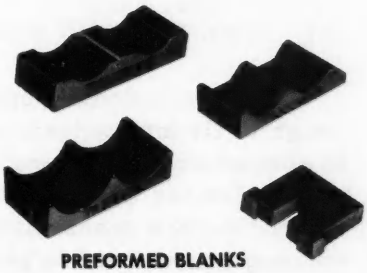
SOLID TOOL BITS



TIPPED TOOLS



CUT-OFF BLADES



PREFORMED BLANKS

TOOLHOLDER INSERTS

TANTUNG is an exclusive V-R cast alloy with high red hardness, a high transverse rupture strength (about double that of most cast alloys), low coefficient of friction and excellent resistance to corrosion. It is tough and highly resistant to shock loads. It withstands far more heat than high-speed steel, but less than carbides.

These characteristics make Tantung an outstanding material for many wear part and cutting tool applications.

Tantung cutting tools bridge the gap between the maximum speeds possible with HSS and the minimum speeds practical with carbides. They offer major opportunities for cost reductions on jobs like these:

Multiple Tooling Set-ups—use Tantung on the operations where surface speed is too high for HSS, too low for carbides. See illustrations at left.

Short Runs on Automatics—reduced tool cost and low grinding cost of Tantung creates substantial savings over HSS and carbide tools.

For Older Machines—when machines lack the horsepower and rigidity to make good use of carbides, Tantung is the answer. Normally, it can be started at 50% to 100% higher speeds than most high-speed steels.

Get complete facts on Tantung. Call your local V-R Representative or Distributor or mail the coupon today.

Vascoloy-Ramet Corporation

896 Market St. • Waukegan, Illinois

NEW BULLETIN tells where and how to use Tantung.

CATALOG lists standard Tantung tools and toolholder inserts.

MAIL COUPON FOR LITERATURE

Vascoloy-Ramet Corporation, 896 Market St., Waukegan, Ill.
Please send: (check what you want)

- ☐ Tantung Booklet
- ☐ Tantung Catalog
- ☐ Cemented Carbide Catalog
- ☐ Toolholder Catalog

Name.....
Business.....
Address.....
City.....Zone....State.....

346. WIDE ELECTRONICS ADVANCES SEEN WITH SOLION:

Sensitive to extremely minute stimuli the new electrochemical unit, solion, can perform many of the functions heretofore performed by gas-filled and vaccuum electronic tubes or more recently by transistors. Naval Ordnance held debut meet July 16 to introduce device to public. New technology known as chemtronics is back of gadget which may revolutionize entire electronics field. Replacement of present aircraft navigation equipment seen possible, with important effect on flight in outer space. All electronics fields may be benefitted--burglar and fire alarms, computers, light detectors, and so on. Solion involves control movement of ions between electrodes through an iodide solution providing highly sensitive detection device, is insensitive to outside electromagnetic forces, making it basis for perfect navigation in high-speed planes and missiles; can be encased in space of pocket watch.
///Naval Ordnance Lab, TIO 1-179 White Oak, Md./

347. THE PENGUIN EGG AND THE THERMOMETER:

Far-reaching scope of usefulness of radio thermometer tiny enough to fit into penguin egg may embrace clothing tests, tests of man in adaptation to cold, and extending of time that body temperature can be lowered for operations. ONR skills have produced transistor to use magnetic-field transmission. Device is placed in cavity of penguin egg and egg is returned to penguin. How cold does embryo get in a normal egg? Answer will help solve problems mentioned above and perhaps others. Can alteration of human body be based on some enzyme to be discovered at work in penguins? Tiny wireless instrument reports may decide. Radio thermometer application to clothing test in Antarctic showed that swimmer in 28.5°(F.) held body temperature to just under 99°(F.), and lost 3/10 of degree every two minutes at rest. ///ONR/

348. FLASH READING OF MICROFILM IMAGES DONE BY FOSDIC:

It is expected that FOSDIC II, high speed electronic device at NBS, will be followed by similar instruments for reading information contained on microfilm images. FOSDIC II is used for weather data. Possibility foreseen for development of information retrieval machine that searches filmed documents accompanied by coded punched cards. And photographic, rather than electrical, copying may be employed.///NBS/

349. AREA CONCEPT USED FOR TV SERVICE MEASUREMENT:

New method of measuring service provided by TV station involves area concept rather than contour concept now used, where service is graded A or B in terms of contour. NBS Boulder Labs proposed that sample measurements be taken at fixed locations around transmitter, selected so terrain types will represent random sample. ///NBS/

350. PROBLEMS IN OBTAINING GOVERNMENT CONTRACTS:

Small electronics firms face varied problems in battling for fair share of federal contracts. Basic attitudes seem to be rock walls. May never change despite congressional interest in more equitable division of contracts. BuAer analyst's report relative to small companies that deal in military electronics equipment is his George Washington University thesis. Penetrating survey indicates that today small firms seem facing almost fatal squeeze. ///Electronic Week/

351. CHRONOMETER MAY END NAVY'S CLOCKWINDING :

Shipboard electronic chronometer is accurate to one second in 12 days in contrast to present one which is accurate to one second every 24 hours. Navy may adopt new device to pinpoint navigation. Except for atomic clock this new instrument of Times Facsimile Corporation may be most accurate chronometer in world. ///Navy Times/

352. MINITRACK RADIO STATIONS WILL EYE VANGUARD:

Ten "minitrack" radio receiving stations will follow IGY satellite VANGUARD after launching in Florida. Telemetry system will relay data from satellite's instruments. Equipment due to be installed this summer in final posts in U.S., British West Indies, South America, and Australia. Army, Navy, and Australians cooperating; 60 men in training. In Western Hemisphere, VANGUARD is expected to swoop from northwest to southeast across Central America and northern South America, but one station is scheduled as far north as Maryland. Russian similar vehicle may be launched in pole-to-pole orbit; may weigh more than VANGUARD. IGY optical stations, principal astronomical observatories, and other official and unofficial viewers may compare notes. ///DATA/

353. HOUSING MATERIALS SHIPPED TO GUAM:

Total replacement housing on Guam when completed will be valued at more than $17 million. Seabees do the job. Majority of materials shipped to Guam come from States. Some lumber and cement come to the island from the Philippines. Concrete stairs, concrete block and cabinets are constructed or prefabricated on the island. All units are typhoon proof, able to withstand winds up to 120 mph. ///CEC Bulletin/

354. GREAT LAKES TO HAVE NEW HOSPITAL:

New naval hospital at Great Lakes, Ill., will accommodate 800 beds and be so constructed that it can be expanded to 1500. T. C. Bateson Construction Company of Dallas has contract. ///BuMed TIO/

355. ST. LAWRENCE SEAWAY BENEFITS EXPOUNDED:

Secretary Brucker of Army in recent talk in Buffalo before ASCE pointed out benefits of St. Lawrence seaway: "Throughout the 1800-mile length of the Lakes and the St. Lawrence, communities are looking forward with optimism and enthusiasm to the prosperity that will be created by the construction programs... Municipalities are studying means of attracting greater trade. Industries are looking forward to expansion. Commercial groups of one lake port city recently declared that the new developments on the Great Lakes might engender $10 billion worth of investment in new industry within the next generation."

///Pentagon OPI 0605/

356. NATIONAL SCIENCE ACADEMY PROPOSED:

A bill to provide for the establishment of an academy to be known as the "United States Science Academy" has been proposed by Congresswoman Katharine St. George of New York. The bill, H. R. 6164, provides for the training of selected men and women between the ages of 17 and 22 years of age as scientists and engineers for service as officers and employees of the United States.

The bill provides for the construction and equipmentation of a suitable group of buildings and the full tuition and a suitable allowance for selected students. Bill now pending in House committee. ///#6164/

357. LIGHTWEIGHT GAS TURBINE ENGINE:

Lightweight gas turbine engine, weighing approximately 1/10th as much as industrial diesel or gasoline engines of comparable performance is now under development by Army. Developed by AiResearch Co., the 326-pound engine will produce 286 hp at 60 degrees (F) and sea level pressure. It is used for engine-generator sets where portability is of paramount importance. ///Additional info: Ft. Belvoir, TIO, Va./

358. ELECTRIC POWER FROM SODIUM REACTOR:

Electric power was produced for the first time 12 July by heat from sodium reactor experiment at AEC plant at Canoga Park, Calif. Built by North American Aviation, this is the first time a non-military atomic energy reactor has produced power for the generation of electricity. With 20,000 kilowatts of heat, the sodium reactor produces a total of 6500 kilowatts of electricity. In first test generator operated at level of about 1000 kilowatts. ///AEC 0715/

359. ARDC SCIENTISTS STUDY RADIATION AND PSYC STRESS:

It has been found that when people are exposed to environmental conditions which constitute threats to themselves or their important values, certain detrimental changes in their behavior are frequently observed. This is the area of psychological stress. The presence of these threats frequently results in emotional and other reactions which interfere with effective performance.

The Air Research and Development Command is conducting a study at Lackland AFB, Texas. Scientists from that base tour 22 nuclear firms and laboratories to interview workers and get their reactions to working with radioactive materials. ///ARDC 0710/

360. LIGHTWEIGHT RADIATION SHIELD NEEDED:

Radiation shield giving 100 percent protection as in subs may be too heavy for any plane to lift or may make plane too slow to be worthwhile. Problems revealed in report by Clarence L. Johnson and F. A. Cleveland of Lockheed. Thus, if flight crews will be only partially protected, frequent rotation will be called for. ///Lockheed/

361. MILITARY TRANSISTOR SPECIFICATIONS GIVEN:

Six-year study of basic test procedures to be used in evaluating transistors for military equipments has resulted in the specification MIL-T-19500A, edited with comprehensive tables, and kept current by BuShips. Tests described are applicable for types of transistors of the frequencies below 6 megacycles with power dissipation up to 1 watt that are now available to individual military specifications.///BuShips Jr/

362. VENTURE CAPITAL FOR MINING URGED:

Amendment to Internal Revenue Code proposed by Cong. Walter Baring of Nevada would stimulate investment of venture capital in production of strategic and critical metals or minerals; if passed, income derived from mine will not be taxed until five years elapse after mine comes into commercial production; ODM determines whether mineral is strategic or critical. ///H.R. 8189/

363. KEY STEPS IN STARTING NEW PLANT OUTLINED:

Eight key steps toward success are suggested for management of small businesses that are starting new plants: write out concrete plans; study market; insist on efficient facilities; review trade experience and technical know-how available; get capable associates; obtain capital; provide for adequate records; consider your own personal qualifications, stamina, ingenuity. Experiences of 130 businessmen successful in launching new enterprises summed up in this leaflet released in late July, which is available from SBA, Washington 25, D.C. ///SBA/

364. COATING ADHESION TESTED BY NEW DEVICE:

Bureau of Standards, studying instruments for measuring adhesion property of protective coatings on aircraft, has found adherometer to be promising; apparatus measures force required to strip a coating from a metal surface. Another device, integrometer, developed at plastics lab, increases speed with which adherometer measurements can be made by converting stripping force into electrical impulses, which are added to give a single average value on a standard recorder.

///NBS/

365. PAINTS FOR SHIP INTERIORS UNDER EVALUATION:

Paints for ship interiors still need evaluation. One problem is maintenance of wet spaces, particularly spaces in which the old paints have been applied. Although new chlorinated rubber base interior paints are expected to reduce difficulties, BuShips is testing alternate coatings such as vinyl wall coverings, plastic wall tiles, porcelain or aluminum wall tiles, unpainted aluminum and ceramic-type paint.

///Navy Bureau of Ships Journal 07/

366. NEW HIGH-TEMPERATURE SYNTHETIC LUBRICANTS:

Alkylsilanes, new class of high-temperature synthetic lubricants for extremely high speed aircraft, have been perfected to retain their lubricating properties in high-powered jet engines at speeds above Mach 2. At these speeds, bearing temperatures approach 700 degrees (F).

The new lubricants are being tested by the Air Research and Development Command at Wright Air Development Center, Dayton.

///Additional information from OIS, ARDC, Box 1395, Baltimore/

367. INKLESS DUPLICATOR SPEEDS NAVY DRAWINGS:

Navy Bureau of Aeronautics is using ingenious low-cost method of producing enlarged engineering drawings from microfilm. Printing is done from microfilm in XeroX Copyflo 24-inch continuous printer, an automatic device that produces drawings up to two feet wide at a speed of 20 feet a minute. The Navy proposes to use the speed printer to furnish potential suppliers with drawings and specifications in sending out invitations for bids. ///BuAer - Rochester, N. Y./

368. THIEBLOT DEVELOPS IN-FLIGHT REFUEL SYSTEM:

A new in-flight refueling system, developed by Thieblot Aircraft Co. of Bethesda, Md., a division of Vitro Corp., is designed to extend the range of current and future tactical aircraft. The system, recently declassified by USAF, has a "Flying Pipe" which enables high speed transfer of fuel - speeds over 530 mph and altitudes of over 30,000 feet are possible with the system the manufacturer says. Entire system is in a unit and can be easily transferred or jettisoned. ///Thieblot/

369. FAT PILOT MAY BE DEAD PILOT: DOCTOR'S STUDY:

Higher protein diets and better general nutrition for pilots are emphasized as urgent need by Navy medical officer, Capt. Jerome A. Moore of Cecil Field, Florida. Accident survey indicates that decompression sickness in flight often involves fat persons. Survey also indicates higher accident rate at hours of low blood sugar level (near noon); doctor recommends high protein breakfast to keep adequate blood sugar levels all day. Usual 12-14 percent butterfat ice cream is replaced by less than 4 percent ice milk. Salad bar is promoted. Cooks and stewards are lectured on their importance in overall program of aviation safety. ///BuMed/

370. DO BACTERIA INHABIT MARS? COULD BE:

Bacteria may inhabit Mars. Artificial conditions similar to Mars atmosphere have been developed for testing bacteria at AF School of Aviation Medicine near San Antonio. These bacteria are healthy and prolific, it was reported at Mars symposium at Lowell Observatory in Flagstaff. /// USAF Med School, San Antonio/

371. VIRUS VACCINE SLATED FOR ALL SERVICE RECRUITS:

By Fall of 1958 military services probably will be inoculating all recruits with adeno virus vaccine. Armed Forces Epidemiological Board recommended target date to give services time to acquire sufficient vaccine and to extend current pilot studies. Army already is giving recruits adeno virus at Fort Dix, Fort Leonard Wood, and Fort Ord. ///Fort Dix/

372. "ATOMIC" FOOD FOR MILITARY MESSES BY 1960:

By 1960 servicemen will be eating "atomic" chow. Wholesomeness and economic feasibility of radiation-preserved foods will have been determined by then as result of two-year feeding program utilizing both human volunteers and animals. Army Quartermaster Corps will construct and put into operation Army Ionizing Radiation Center, Sharpe General Depot, Lathrop, California. AEC will supply reactor, Corps will construct high energy particle accelerator. /// Army QM Corps/

373. HASP FIRING RESULTS PROVE DESIGN FEASABILITY:

Preliminary reports of the recent HASP research missile firings at Chincoteague, Va., prove that the basic rocket design is sound and that the 100,000-foot goal of the weather rocket can be reached on a routine basis. In October, parachute equipped HASPs are expected to be ready for firing. Instruments to relay weather information are to be evaluated in the spring of 1958.

///Naval Ordnance Lab, TIO 1-179, White Oak, Md./

374. NOL EXPANDS UNDERWATER EXPLOSION AREA:

NOL's Stump Neck, Md., facility has recently been expanded to include a test pond for underwater explosions. The pond is used to measure the air blast effects of up to 10 pounds of explosives set off under the surface. On either side of the 100-foot wide, 10-foot deep pond are two towers from which wires are suspended at various heights. Piezoelectric gages attached to the wires indicate electrically the motion of the air blast. ///NOL Report 07-1/

375. COLORED SMOKE GRENADE:

A small pocket-sized colored smoke grenade has been developed especially for the use of airborne troops. About the size of a one-ounce tobacco can, it weighs less than one and one-fourth pounds, and is available in five colors rather than the three of the older heavier grenade. It will be used by paratroopers to signal aircraft over head and to mark landing and drop zones. ///Military Review 06/

376. ZUNI ROCKET MOTOR TUBES PRODUCTION CONTRACT:

Pilot production of aluminum rocket motor tubes for the Navy's new rocket, ZUNI, will be undertaken by Hunter-Douglas Div. of the Bridgeport Brass Co., Riverside, Calif., under an approximate $2 million contract awarded by the Navy's Bureau of Ordnance.

The ZUNI is approximately nine feet in length and is a high velocity air-to-air five-inch-diameter weapon. Up to 48 ZUNI missiles can be carried on one airplane because of the compact launcher package design. ///Pentagon OPI 0712/

377. SEPTEMBER NATO EXERCISES SET:

Huge U. S. participation is scheduled for North Sea and Mediterranean exercises in late September. STRIKE BACK project will include chief carriers and battleships. SEA WATCH will test strengths in anti-sub work. Med war games will include 8000 Marines and will be designated DEEP WATER. Earlier in month Canada and U.S. will maneuver in SEA SPRAY. October will see PIPE DOWN as a transit exercise of British and U.S. ///Pentagon releases/

378. UNDERWATER SHOCK GREATEST ATOMIC HARM TO SHIPS:

Shock wave traveling swiftly through water after Bikini 1956 tests was major cause of damage to ships; peak pressure at 3000 feet from 100-kilton bomb burst in deep water is about 2700 pounds per square inch, but in air it is only a few pounds per square inch. However, water shock is only few hundredths of second as compared to a full second or so in air. Hull plates will rupture; main feed lines, main steam lines, shafting and boiler brickwork within ship are especially sensitive to shock, says DOD-AEC handbook just out. After explosion, water shock can reach two miles from surface zero in two seconds. No mention is made in handbook of "absolutely clean" hydrogen weapons. ///BuOrd/

379. BOAT DAVITS' KINKS CAUSE DEATH AND INJURY:

Some of the casualties in power-operated gravity boat davits during handling have resulted in death or injury to operating personnel and in almost every instance the boats involved were damaged or lost. Now BuShips has specified that certain safety features should be incorporated in any new davits procured, and safety procedures will be used in regard to old ones. Most casualties occur when limit switches fail to shut off power after davit head has hoisted boat beyond stowed position.
///BuShips/

380. JAPAN LEADS WORLD IN 1956 LAUNCHINGS AND EXPORTS:

Lloyd's says Japan leads in launchings and export-shipping tonnage for 1956, and ranks equally with West Germany and Sweden in offering minimum average ship-construction times of nine months. ///AMMI/

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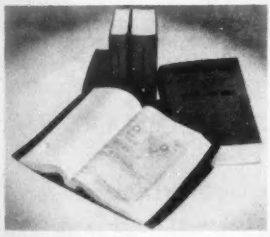

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Editor, DATA
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Dear Mr. Smith:

We would like to congratulate you upon your new service for getting out press releases for the Department of Defense so early. This is a real service both to DOD and to many industria magazines.

As a matter of fact, I wonder if you would not send an announce ment of this to Mr. Wooton, Executive Secretary of the Society Business Magazine Editors. His complete name and address is s at the bottom of this letter.

Aeronautical PURCHASING

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Associate Editor

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Yours very truly,

J. Fredrickson
Chief, Physical Metallurgy Section
Metallurgical Laboratory

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15 August 1957

DATA HAS A BIRTHDAY:

On the first of September DATA will be one year old. A special Anniversary Edition is planned. Watch for it.

381. NAVY EYED AS STEADIEST MILITARY BUYER THIS YEAR:

Contract experts in various positions of authority have been pointing out that the Navy looks to be the steadiest military buyer for FY 1958. In electronic gear alone, the Navy's diversified role makes it necessary to provide electronic detection devices in air, surface and underwater equipment. Although dollar amount allocated is not spectacular, the Navy's diversification gives promise of providing a larger number of contracts per dollar allocated than the other services. ///D/

382. TRUCK TIRES MADE OF BUTYL DEVELOPED FOR ARMY:

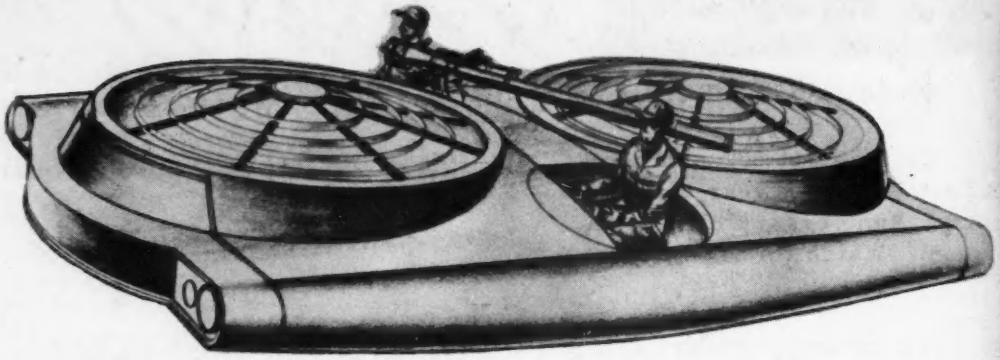
Heavy duty butyl truck tires have been perfected by the Esso Research and Engineering Co. of N. Y. and the Pennsylvania Tire Co. of Mansfield, Ohio. Army Ordnance says new tires are superior to rubber in many ways, especially resistant to deterioration. ///Pent. OPI 0812/

383. RADIO RESEARCH IN GREAT BRITAIN:

Booklet describing radio research in Great Britain can be had by writing British Information Services, Rockefeller Plaza, New York 20, N. Y. Booklet describes British studies in ionospheric and tropospheric scatter and IGY participation. ///Elec. News 0805/

384. A-PROSPECTING WE WILL GO:

The popular modern day "bible" for uranium hunters has been revised and is now available. AEC tells us that "Prospecting for Uranium" may be ordered by sending 75¢ to the Supt. of Documents, Govt. Printing Office, Washington 25, D. C. ///AEC 0802/



385. AERIAL JEEP CONTRACTS:

Shown above is the winning design of the Chrysler Corporation for the Army's aerial jeep competition. Chrysler will receive $661,000 to design and build the craft shown in the above sketch. Other winners in the Army competition to design and build prototype ducted-fan rotorcraft as light vehicles were Aerophysics, a subsidiary of Curtis-Wright, receiving a $388,000 contract to develop their design, and Piasecki Aircraft Corp., awarded $653,000 to build its vehicle.

Army is to get a total of six vehicles, two from each contractor. Work is divided into three phases: preliminary design and wind tunnel testing, construction and flight test.

///Transportation R&D, Ft. Eustis, Va./

386. PHAMPHLETS ON SELLING TO DEFENSE DEPT. AVAILABLE:

Two booklets, one entitled "How to Sell to the Department of Defense" and the other tagged "Purchased Items and Purchasing Locations of the Department of Defense," are now available to DATA and DATA DAILY subscribers at no charge through the courtesy of the Office of the Small Business Advisor in the Pentagon.

The first publication is a 17-page booklet designed to welcome potential new suppliers in the defense procurement program, give better understanding of the buying methods of the Armed Forces, and to assist the contractor where, within the Department of Defense, his particular products may be purchased. The second phamphlet is a 37-page guide that tells what you can sell and where you should go to sell it.

Only one set of books to a subscriber, please, as supplies are limited. Write direct to DATA, at the address above, and request the booklets listed in article #387.

///Pentagon OSBA 0812/

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